PATENT SPECIFICATION (11) 1 441 747

1 441 747

(21) Application No. 48017/72 (22) Filed 18 Oct. 1972 (19)

(23) Complete Specification filed 16 Oct. 1973

(44) Complete Specification published 7 July 1976

(51) INT. CL.² A61K 33/24 (A61K 33/24 31/33)

(52) Index at acceptance

A5B 211 213 214 215 216 21Y 26Y 273 27Y 728 72Y

(54) VETERINARY COMPOSITIONS

(71) I, BRIAN LAZONBY, a British subject of 4 Portland Avenue, Grimsby, Lincolnshire, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention is concerned with veterinary compositions for the treatment of mastitis in dry cattle.

Mastitis is an inflammation of the udder caused mainly by bacterial infection (90% of infections being due to staphylococci or streptococci). In round figures it may be said that 50% of all cattle have sub-clinical mastitis and that 75% of all cattle are effected for 75% of their milking life, and thus mastitis is a severe problem amongst dairy cattle. The problem is aggravated with dry cattle in that the tendency is for them not to be inspected as regularly as would be desired. Further, mastitis in cattle which are dry during the months of July, August and September often leads to the more debilitating infection known as summer mastitis.

One common method for the treatment of mastitis in dry cattle is to treat the teats wih a long acting antibiotic material so as to kill off any latent infection and prevent subsequent infection. Unfortunately, however, such treatment has the disadvantage that effective protection only lasts for about a fortnight and for more prolonged protection repeated examination and treatment of the cattle is required. This is both expensive and time-consuming and is often neglected.

It is an object of the present invention to provide an improved veterinary composition for use in the treatment and/or prevention of mastitis in dry cattle.

The composition of the invention, which is adapted for intramammary injection, comprises two main ingredients, namely an antibiotic or other antibacterial agent and a non-toxic heavy metal salt. These two ingredients are contained in a solid or semi-solid base, which melts at a temperature at or below the cow's body temperature, e.g. at a temperature of about 38°C or below.

The first ingredient of the compositions of the present invention, namely the antibiotic or other antibacterial agent is present in the composition to kill bacterial infection which may be present in the teat or udder and lead to mastitis. A very wide variety of antibiotics and other antibacterial agents are known for use in the treatment of mastitis and any of these, alone or in combination, can be used in the compositions of the present invention. Thus, antibiotics which may be used in the composition of the present inventions include penicillins, streptomycins, framycetins, erthromycins, cloxacillins, oxytetracyclines and neomycins. Antibacterial agents, other than antibiotics, which may be used in the compositions of the invention include, for example, nitrofurans dapsone and sulphonamides. The actual amount of antibacterial and/or antibiotic present in the composition will, of course, depend upon the intended unit dosage of the composition and the potency of the particular antibiotic and/or antibacterial material employed. It is thus very difficult to give meaningful limits of the very wide range of antibiotic and or antibacterial materials commonly employed in the treatment of mastitis but it may be said that the antibiotic and/or antibacterial should be present in the composition in an amount of antibiotic and/or antibacterial comparable or of the order of that employed in conventional mastitis therapy.

The second component of the composition of the invention is a heavy metal salt, e.g. a salt having a density greater than 4 grams/c.c. The salt, should of course, be non-toxic and suitable salts are basic salts of bismuth, especially bismuth subnitrate. The function of this heavy metal salt is, as will be described in more detail below, to form a mechanical plug at the mouth of the teat to prevent reinfection of the teat. The heavy metal salt suitably forms from 15—30% by weight of the composition.

The third component of the compositions of the invention is the carrier base which is

a solid or semi-solid material, generally waxy in character, which melts at or below the cow's body temperature. A wide variety of suitable carrier materials are known and the carrier may for example comprise a mixture of beeswax, soft paraffin and liquid paraffin and may also contain, additionally or alternatively, other waxy materials such as fatty acids and fatty acid esters.

The compositions of the invention are intended for administration by intramammary injection and to this end it is often convenient to put the composition up in dosage unit form in disposable plastic syringes, each containing sufficient of the composition, e.g. from 5 to 15 grams, for treatment of one quarter of the udder.

In treatment, the composition of the invention is injected into the teat canal in a convenient manner and it is believed that on introduction of the teat canal two separate and distinct actions take place. Thus, firstly, the antibiotic and/or antibacterial agent acts in an entirely conventional manner to kill any bacterial infection present and thus prevent the occurrence of mastitis. At the same time, the carrier base melts sufficiently to allow the heavy metal salt to fall, under the action of gravity, to the bottom of the teat canal where it forms a physical plug, which acts as a physical barrier to prevent reinfection of the teat canal. Thus, after a period of time when the potency of the antibacterial and/or antibiotic agent may have ceased the physical plug formed by the heavy metal salt still remains to prevent ingress of infection and, hence, the teat canal remains uninfected and protected against mastitis. The heavy metal salt forming the physical plug should, of course, be non toxic so that in the event of being ingested by a calf it will not harm the calf.

In order that the invention may be well understood the following example is given by way of illustration only:

EXAMPLE

The following formulation is made up:—

	gms.
Acriflavine	4.5
Bismuth subnitrate	1500
Distilled water	100
White beeswax	265
White soft paraffin	990
Liquid paraffin B.P. ...	2340.5
Procaine Penicillin G ...	800
	6000

This formulation is sufficient to produce 800 dosage units each containing 7.5 grams of the formulate.

WHAT I CLAIM IS:—

1. A veterinary composition comprising (a) an antibiotic or other antibacterial agent and (b) a non-toxic heavy metal salt, both contained in a solid or a semi-solid base which melts at a temperature at or below bovine body temperature.

2. A composition as claimed in Claim 1 in which the heavy metal salt has a density of greater than 4 grams per c.c.

3. A composition as claimed in Claim 2 in which the heavy metal salt is a basic bismuth salt.

4. A composition as claimed in any one of the preceding claims containing from 15 to 30% by weight of heavy metal salt.

5. A composition as claimed in any one of the preceding claims in dosage unit form.

6. A composition as claimed in Claim 5 in which each dosage unit contains from 5 to 15 grams of composition.

7. A composition as claimed in Claim 1 substantially as hereinbefore described and with reference to the Example.

MARKS & CLERK,
Chartered Patent Agents,
57 & 58 Lincoln's Inn Fields,
London, WC2A 3LS.
Agents for the Applicants.

Printed for Her Majesty's Stationery Office by Burgess & Son (Abingdon), Ltd.—1976.
Published at The Patent Office, 25 Southampton Buildings, London, WC2A 1AY
from which copies may be obtained.